## REMARKS

Claims 1-17 and 23-27 are pending in the application and are at issue.

In previous actions and in this action, the examiner indicated that a certified copy of the priority document was not received. As previously noted, the present application is a §371 application of PCT Application No. PCT/EP05/003009, and the priority document was filed during the international phase of the application. See Notice of Acceptance of Application under 35 U.S.C. §371 mailed on July 13, 2007, clearly stating that the priority documents *have been received.* In view of the above, it is requested that the examiner acknowledges foreign priority in the next communication in connection with the above-identified application.

Claims 1, 3-15, 23-25, and 27 stand rejected as being obvious under 35 U.S.C. §103 over Wada et al. U.S. Patent No. 5,797,893 ('893) in view of Abuelyaman et al. U.S. Patent Publication No. 2001/0020062 ('062 publication), Tomalia et al. U.S. Patent No. 4,507,466 ('466), and Wada et al. U.S. Patent Publication No. 2004/0048955 ('955 publication).

The basis of this rejection is that the '893 patent discloses an absorbing agent composition containing absorbent polymer particles, a water-insoluble inorganic powder, and a polyamine compound, and the '062 publication discloses a dendritic polymer dispersant for hydrophobic particles. The examiner contends that it therefore would have been obvious to utilize a dendritic polymer of the '062 publication in the absorbing composition of the '893 patent. The '466 patent is cited for disclosing specific dendritic polyamidoamines. The '955 publication adds little or nothing to the '893 patent. Applicants traverse this rejection.

Claim 1 recites swellable hydrogel-forming polymer particles having at least one hydrophilic polymer of dendritic structure (dendritic polymer) and at least one water-insoluble phosphate present on the surfaces of the particles.

Example 5 provides an excellent description of the invention recited in independent claim 1 and the dependent claims. In particular, the example discloses the preparation of superabsorbent (SAP) particles from a monomer solution containing partially

neutralized acrylic acid (specification, page 19, line 41 through page 20, line 6). The SAP particles are dried, then sized to a desired particle size range by sieving (specification, page 20, lines 8 and 9). The SAP particles then are postcrosslinked, wherein the postcrosslinking solution contains a dendritic polymer (BOLTORN H-40) and tricalcium phosphate (specification, page 20, lines 29-36). The postcrosslinking solution is sprayed onto the SAP particles to position the dendritic polymer and water-insoluble phosphate on the surfaces of the SAP particles (specification, page 20, lines 40-41). The dendritic polymer and water-insoluble phosphate also can be applied to the SAP particle surfaces in the same manner in the absence of a surface postcrosslinker (specification, page 5, lines 30-35, for example).

A determination that a claimed invention would have been obvious under §103(a) is a legal conclusion involving four factual inquiries: (1) the scope and content of the prior art; (2) the differences between the claimed invention and the prior art; (2) the differences between the claimed invention and the prior art; (3) the level of ordinary skill in the pertinent art; and (4) secondary considerations, if any, of non-obviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). Secondary considerations of non-obviousness include factors such as commercial success, long-felt but unresolved needs, the failure of others, and/or unexpected results achieved by the claimed invention. *Id.* Obviousness is determined from the vantage point of a hypothetical person having ordinary skill in the art which the claimed subject matter pertains, who is presumed to have all prior art references in the field of the invention available to him/her. In *re Rouffet*, 149 F.3d 1350, 1357 (Fed. Cir. 1998). Furthermore, obviousness must be determined as of the time the invention was made and in view of the state of the art that existed at that time. *Uniroyal Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 1050-51 (Fed. Cir. 1988).

The Patent Office must clearly articulate facts and reasons why the claimed invention "as a whole" would have been obvious to a hypothetical person having ordinary skill in the art at least as of the claimed invention's effective filing date. *KSR Int'l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1741 (2007) (citing with approval In *re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) ("[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.")); see also MPEP §2143 ("The

key to supporting any rejection under 35 U.S.C. §103 is the clear articulation of reason(s) why the claimed invention would have been obvious.").

To reach a proper determination under 35 U.S.C. §103(a), the examiner must step backward in time and into the shoes worn by the hypothetical "person of ordinary skill in the art" when the invention was unknown and just before it was made. In view of all factual information, the examiner must then make a determination whether the claimed invention "as a whole" would have been obvious at that time to that person. Knowledge of applicants' disclosure must be put aside in reaching this determination, yet kept in mind in order to determine the "differences," conduct the search, and evaluate the "subject matter as a whole" of the invention. The tendency to resort to "hindsight" based upon applicant's disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the *facts* gleaned from the prior art. MPEP §2142.

As articulated by the Court of Appeals for the Federal Circuit in *Ortho-McNeil Pharmaceutical Inc. v. Mylan Laboratories Inc.,* 86 USPQ 2d, 1196, 1201-2 (Fed. Cir. 2008):

> "As this court has explained, however, a flexible TSM test remains the primary guarantee against a non-statutory hindsight analysis such as occurred in this case. *In re Translogic Tech., Inc.* 504 F.3d 1249, 1257 [84 USPQ 2d 1929] (Fed. Cir. 2007) ("[A]s the Supreme Court suggests, a flexible approach to the TSM test prevents hindsight and focuses on evidence before the time of invention.)."

Furthermore, to establish a prima facie case of obviousness, the examiner must satisfy three requirements. First, the prior art references must teach or suggest all the limitations of the claims. In *re Wilson*, 165 USPQ 494, 496 (C.C.P.A. 1970). Second, as the U.S. Supreme Court held in *KSR International Co. v. Teleflex Inc. et al.*, 127 S.Ct. 1727 (2007), "a court must ask whether the improvement is more than the predictable use of prior art elements according to their established functions. ...it [may] be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was *an apparent reason* to combine the known elements in the fashion claimed by the patent at issue.

...it can be important to *identify* a *reason that would have prompted a person of ordinary skill in the relevant field to combine the elements* in the way the claimed new invention does... because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known." (emphasis added, *KSR*, *supra*). Third, the proposed modification of the prior art must have had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. *Amgen Inc. v. Chugai Pharm. Co.*, 18 USPQ2d 1016, 1023 (Fed. Cir. 1991).

In addition, the Court in *KSR* held that a factfinder should be aware of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning. *KSR Intern. Co. v. Teleflex Inc.*, 127 S.Ct., 1727, 1742 (U.S. 2007). The Court in *KSR* also held that a patent composed of several elements is not proved obvious merely by demonstrating that each of the elements was, independently, known in the prior art (*KSR*, 127 S.Ct. at 1741). The examiner may be utilizing the teachings of the specification in an attempt to modify the references to allegedly arrive at the claimed invention. It is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the prior art so that the claimed invention is rendered obvious. *In re Gorman*, 933 Fed. 2nd 982, 987, 18 USPQ 2nd 1885, 1888 (Fed. Cir. 1991). *In re Fritch*, 23 USPQ 2nd 1780 at 1784 (Fed. Cir. 1992).

Applicants also respectfully note that MPEP §§2142 and 2143 require that the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicants' disclosure. *In re Vaeck*, 947 F.2d 4899 (Fed. Cir. 1991). The mere fact that the prior art may be modified in the manner suggested by the examiner does *not* make the modification obvious unless the prior art suggests the desirability of the modification. *In re Gordan*, 733, F.2d at 902, 221 USPQ at 1127. *In re Fritch*, 23 USPQ 2nd 1780, 1783-1784 (Fed. Cir. 1992).

The '893 patent discloses an absorbing agent composition containing an absorbent resin, a water-insoluble inorganic powder, and a polyamine compound (column 5, lines 17-38). Numerous polyamine compounds are disclosed in the '893 patent at column 10, line 57 through column 11, line 59. The examiner *correctly* states that the '893 patent *fails* to

teach or suggest *any* dendritic polymer, and the extensive list of polyamines disclosed in the '893 patent contains *no* dendritic polymers. It is important to note that the '893 patent states that the polyamine "*must contain*" at least one of a primary, secondary, or tertiary amino group, i.e., a nitrogen containing group ('893 patent, column 10, lines 53-57).

The examiner refers to the "polyalkyleneimine" and "polyamidepolyamine" in the list of polyamine examples of the '893 patent. However, as explained in a prior response, such polyamines have a structure substantially different from a *dendritic* polymer. Applicants previously provided Exhibits A-H showing the structure of a dendritic polymer and how this structure differs from the standard polyamines disclosed in the '893 patent. In short, the term "polyamine" or "polyamidoamine" defines the functional groups and types of bonding in the polymers, but *not* the *structure* of the polymer. See pages 7-10 of applicants' prior response of September 28, 2009. It is well known in the art that different polymer structures lead to different properties.

The '893 patent provides no teaching or suggestion that would have led a person skilled in the art to substitute a dendritic polymer for a polyamine of the '893 patent. The '062 publication fails to cure the deficiencies of the '893 patent.

The '062 publication discloses dispersants that adsorb to *hydrophobic* particle surfaces (abstract). The hydrophobic particles disclosed in the '062 publication are inorganic compounds, such as insoluble pigments (paragraphs [0059]-[0063]). The dispersant reduces the tendency of *hydrophobic* particles to agglomerate. The '062 publication discloses a "hydrophobic particle" that is nonpolar or has a nonpolar surface ('062 publication, paragraph [0027]). The '062 publication is not remotely directed to *hydrogel* forming polymer particles, which are *hydrophilic*.

Further, the dispersants of the '062 publication are dendritic polymers that have been *modified* by chemical reactions "to attach ionizable moieties and peripheral nonpolymerized nonpolar hydrocarbon hydrophobic moieties" ('062 publication, paragraph [0047]). See [0081]-[0084] of the '062 publication, wherein the BOLTORN dendritic polymers are highly modified to provide the dispersants of the '062 publication. Importantly, the BOLTORN H30 that is modified in the '062 publication (see paragraphs [0082]-[0083]) is

*not* a polyamine, but rather is a poly*hydroxy* compound free of amino groups (see structure of BOLTORN H30 in Exhibit C previously provided with Amendment "B" on September 28, 2008).

The dispersants of the '062 publication therefore have a structure substantially different from the dendritic polymer used as a starting material, and neither the modified nor the unmodified dendritic polymer of the '062 publication are polyamines. The '893 patent *requires* a polyamine, and accordingly a person skilled in the art would not substitute a modified or an unmodified dendritic polymer disclosed in the '062 publication for a polyamine of the '893 publication. Further, the '062 publication fails to teach or suggest using a dendritic polymer that has *not* been modified as a dispersant.

In view of the teachings of the '893 patent and '062 publication, a person skilled in the art would not have combined the references in a way that leads to the presently claimed invention. As stated above, a substitution of the polyhydroxy dendritic polymer (modified or unmodified) disclosed in the '062 publication destroys the teachings of the '893 patent which explicitly discloses the *need* for a polyamine. It is submitted that a person skilled in the art would have had no incentive or apparent reason to make this substitution, let alone a substitution using an unmodified dendritic polymer.

Not only does the '062 publication disclose dendritic polymers that do not contain the amino groups explicitly taught or necessary by the '893 patent, the '062 publication utilizes a *modified* dendritic polymer to prevent agglomeration of *hydrophobic* particles. The '062 publication defines hydrophobic particles as being non-polar. However, the claimed hydrogel forming particles are *hydrophilic*, i.e., water absorbing. A person skilled in the art therefore would have had no apparent reason to position a modified dendritic polymer of the '062 publication, or any unmodified dendritic polymer, on a *hydrophilic*, hydrogel-forming particle.

If the examiner contends that a modified dendritic polymer of the '062 publication would be positioned on a hydrogel-forming particle because of the presence of a water-insoluble phosphate, such a substitution would not be made for the reasons set forth above. The '062 publication specifically teaches that a dendritic polymer *must be* modified to

perform as a dispersant for a hydrophobic particle. The '062 publication fails to teach or suggest that an unmodified dendritic polymer can perform as a dispersant and the '893 patent requires a polyamine, thus substitution of an unmodified dendritic polymer on a hydrogel-forming particle coated with a water-insoluble phosphate would not provide a predictable result.

Further, it is submitted that in view of the substantial difference in structure between a polyamine disclosed in the '893 patent and a modified or unmodified dendritic polymer, a person skilled in the art would not have substituted a dendritic polymer for the polyamine of the '893 patent with any reasonable or predictable expectation of providing a hydrogel forming particle having improved properties, as disclosed in the '893 patent.

It is submitted therefore that a combination of the '893 patent and the '062 patent does not render the present claims obvious. The '466 patent and '955 publication do not cure the deficiencies of the '893 patent and '062 publication. The '955 publication adds nothing to the '893 patent; both are directed to water-absorbing particles. See '893 patent, columns 5-9. The '466 patent merely discloses various *unmodified* dendritic polymers with no suggestion as to their use with hydrogel-forming polymer particles.

Therefore, it is submitted that a combination of the '893 patent, '062 publication, '466 patent, and '955 publication fails to render the present claims obvious.

With respect to comments made by the examiner in the Office Action, the statement in paragraph 6 at page 3 that the '062 publication is directed to *polymer* systems is incorrect. The '062 publication is directed to pigment systems, i.e., '062 publication discloses a hydrophobic pigment particle having a hydrophobic polymer and a modified dendritic polymer on the surface particle surface (see '062 publication, Fig. 2). The present claims recite a hydrogel-forming particle (hydrophilic) having a phosphate and an unmodified dendritic polymer on the particle surface.

At paragraph 7, page 3 of the Office Action, the examiner states that the '466 patent teaches the same polyamines as the '893 patent. This is incorrect and inconsistent with the examiner's statement in paragraph 5 of the Office Action that the '893 patent fails to teach

a dendritic polymer. The '893 patent merely discloses polyamines that are not dendritic; the '466 patent is limited to dendritic polymers.

In view of the above comments, the examiner is reminded of the recent decision of *In re Chapman* (CAFC 2009-1270) wherein the court stated that misunderstanding a reference is not harmless error because it increases the likelihood that an applicant is erroneously denied a patent on grounds of obviousness. In such a situation, an examiner's conclusion regarding obviousness are called into question.

The examiner's comment that it would have been obvious to substitute the polyamine of the '893 patent with a dendritic polymer of the '062 publication is mere speculation unsupported by the references, but rather destroyed by the '893 patent. The '893 patent explicitly requires a polyamine. The '062 publication does not disclose a polyamine, but rather a dendritic polyol (see '062 publication paragraphs [0081]-[0084]). Further, the '062 publication seeks to avoid agglomeration of *hydrophobic* particles. Hydrogel-forming particles are hydrophilic. Accordingly, the combination of references provides no apparent reason for a person skilled in the art to modify the references in the way presently claimed. The examiner has failed to provide any factual reasoning that would support the proposed modification.

With respect to claim 7, the examiner relies upon a result-effective variable theory to support the rejection. This is an improper basis to reject claim 7. For an examiner to rely upon a result-effective variable, the variable must be recognized *in the art* as result effective for the variable claimed. The cited art is totally silent with respect to hollow microspheres, let alone hollow microsphere of a specific wall thickness and diameter. Accordingly the inclusion of hollow microspheres cannot be termed result effective. See MPEP §2144.05II.B. In addition, because *multiple* variables control absorbent phase density and strength, and diaper weight, the result-effective variable rationale used of the examiner does not apply. Further, because the cited art *fails* to teach or suggest hollow microspheres, claim 7 cannot be rejected as being obvious simply because the art fails to teach or suggest every element recited in the claim. Finally, the examiner's rationale that the hollow microspheres would lead to a lighter diaper is pure conjecture and unsupported by the art.

For all the reasons set forth above, it is submitted that claims 1, 3-15, 23-25, and 27 would not have been obvious under 35 U.S.C. §103 over a combination of the '893 patent, '062 publication, '466 patent, and '895 publication, and that the rejection should be withdrawn.

Claims 2 and 26 stand rejected under 35 U.S.C. §103 as being obvious over the '893 patent in view of the '062 publication, the '466 patent, the '955 publication, and Holt et al. U.S. Patent No. 5,418,301 ('301). Applicants traverse this rejection.

The patentability of the clams over a combination of the '893 patent, '062 publication, '466 patent, and '955 publication has been discussed above. The '301 patent does not overcome the deficiencies of these four cited references. The '301 patent is relied upon for a disclosure of the type of dendritic polymer recited in claims 2 and 26. However, a person skilled in the art would not have substituted a dendritic polymer of the '301 patent for a polyamine of the '893 patent.

With respect to claims 2 and 26, the examiner's attention again is directed to the '893 patent, at column 10, lines 53-57, stating that the polyamine "*must contain*" at least one of a primary, secondary, or tertiary amino group, i.e., a nitrogen containing group. This should be compared to a dendritic polymer of the type recited in the claims 2 and 26, and utilized in the examples of the specification, i.e., BOLTORN H-40, and in the '062 publication, i.e., BOLTORN polyols, the structure of which is illustrated in previously provided Exhibit C. These dendritic polymers are not taught or suggested by the '893 patent. The '893 patent is silent with respect to the dendritic polymers recited in claims 2 and 26. The '893 patent polyamine *requires* amino-groups. The secondary reference provides no apparent reason to substitute a dendritic polymer of claims 2 and 26 (free of amino groups) for the polyamine of the '893 patent. In fact, such a substitution would destroy the teachings of the '893 patent. The explicit teachings of the '893 patent clearly teach persons skilled in the art away from any arguable substitution of a dendritic polymer of claim 2 or 26 for a polyamine of the '893 patent.

In particular, as discussed above, the '893 patent *requires* a polyamine containing amino groups. The dendritic polymer of the '301 patent, and those recited in

claims 2 and 26, do *not* contain amino groups. Accordingly, substituting a dendritic polymer of the '301 patent for the polyamine of the '893 patent would destroy the teachings of the '893 patent. The '893 patent teaches away from such a substitution, and any contention that such a substitution would have been obvious in an obvious reconstruction of the claims.

In view of the above, because the '062 publication requires a modified dendritic polymer that further has been modified, because the '062 publication is directed to nonpolymeric hydrophobic particles, as opposed to polymeric hydrophilic particles, because the polyamine of the '893 patent is different from a dendritic polymer, because the '893 patent fails to provide any teaching or suggestion that a dendritic polymer could be substituted for a polyamine, and because of the additional reasons set forth above with respect to an essential poly*amine* required by the '893 patent, it is submitted that claims 2 and 26 would not have been obvious over a combination of the five references cited by the examiner, and that the rejection should be withdrawn.

Claims 16 and 17 stand rejected under 35 U.S.C. §103 as being obvious over the '893 patent in view of the '062 publication, the '466 patent, the '955 publication, and Goldman et al. U.S. Patent No. 5,562,646 ('646). Applicants traverse this rejection.

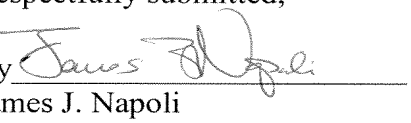
The patentability of the claims over the '863 patent, '062 publication, '466 patent, and '955 publication has been discussed above. Claims 16 and 17 recite preferred embodiments of the invention. The '646 patent does not overcome the deficiencies of the four references. The '646 patent is relied upon for teaching particles having a high SFC value. However, applicants do not rely solely upon the features of a high SFC recited in claims 16 and 17 for patentability. Applicants do rely however upon all the features recited in claims 16 and 17, *and* in independent claim 1 from which they depend for patentability. Applicants have set forth reasoning why claim 1 is patentable over the cited references, and the '646 patent does not negate the patentability of independent claim 1. It is submitted therefore that claims 16 and 17 are patentable over the cited references for the same reasons independent claim 1 is patentable over these references, and that the rejection of these claims under 35 U.S.C. §103 should be withdrawn.

It is submitted that all claims are in a form and scope for allowance. An early and favorable action on the merits is respectfully requested.

Should the examiner wish to discuss the foregoing, or any matter of form in an effort to advance this application toward allowance, the examiner is urged to telephone the undersigned at the indicated number.

Dated: May 10, 2010

Respectfully submitted,

By 

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